Appendix II: Technical Notes and Definitions

Race and Ethnicity

Racial and ethnic categorizations used in this report are adopted from the minimum standard racial and ethnic categories for federal reporting established by the federal Office of Management and Budget on October 30, 1997, as follows:[1]

Race

American Indian or Alaska Native
Asian
Black or African American
Native Hawaiian or Other Pacific Islander
White

Ethnicity

Hispanic or Latino
Not Hispanic or Latino

Categories for reporting statistical data by race in this report include at a minimum American Indian, Black or African American, Asian, and white. (Some additional breakdown for the "Asian" category is provided in the chapter on maternal and child health.) The ethnicity categories are Hispanic/Latino and non-Hispanic/Latino. Unless otherwise noted, racial group categories (e.g., African American, American Indian, Asian, white) exclude Hispanic/Latinos; the Hispanic/Latino ethnic category includes persons of any race.

With one exception, the racial/ethnic categories used in this report correspond to those identified by the federal Office of Management and Budget (OMB) directive for federal reporting of race and ethnicity as of 2000. The exception is inclusion in this report of "Native Hawaiian and Other Pacific Islanders" in the "Asian" category, which is consistent with OMB recommendations for reporting prior to 2000.

The racial/ethnic categories used in this report reflect the availability of racial and ethnic group data in U.S. and Wisconsin data sources. In most cases, race and ethnicity are based on self-identification, but the options for categorizing self-identified race or ethnicity may vary with different sources of data. The discussion on data sources below identifies issues unique to the various data related to definitions of race and ethnicity.

Data Sources

Behavioral Risk Factor Surveillance System. The Wisconsin Behavioral Risk Factor Surveillance System (BRFSS) is a representative, statewide telephone survey of Wisconsin household residents 18 years and older. The survey employs a stratified sample design and results are weighted to account for non-response, sample design, and number of adults in each. Percentages are weighted to estimate the proportion of the Wisconsin adult population household who engage in health-risking behaviors and the percentage who utilize particular health screening procedures. To provide adequate sample sizes, estimates were developed by aggregating data over several years, usually 1996–2000 in this report. Data from the BRFSS are not shown if size of the population in the denominator of a proportion contains fewer than 100 cases.

Birth Data. Wisconsin birth data are based on resident birth certificates filed with the State Registrar, Wisconsin Department of Health and Family Services Vital Records Section. The birth file includes certificates for births to Wisconsin residents, regardless of where the births occurred. All live births, fetal deaths, and infant deaths are classified by race and Hispanic origin of mother into one of six categories: non-Hispanic white, non-Hispanic African American/Black, non-Hispanic American Indian, non-Hispanic Laotian/Hmong, Hispanic/Latino, and non-Hispanic Other. The category non-Hispanic Other is almost entirely Asian. The Laotian/Hmong category consists of

mothers whose race was indicated as "Laotian" or "Hmong" and mothers born in Laos. This report includes selected tables based on birth data that identify Laotian/Hmong as a racial group.

Cancer Data. Cancer incidence data are compiled from reports submitted by Wisconsin hospitals, clinics, and physicians to the Wisconsin Cancer Report System, as mandated under Sec. 255.04, Wis. Stats. Hospitals report all cases seen with active cancers. Clinics and physicians report all treated cases and any nontreated cases that have not been referred to a Wisconsin hospital. Central cancer registries in 18 other states and several Minnesota hospitals that diagnose and/or treat Wisconsin resident cancer patients voluntarily report to the Wisconsin Cancer Reporting System. All reports include demographic and treatment information as well as tumor characteristics. Reportable cancers are all malignant invasive and noninvasive neoplasms except basal cell and squamous cell carcinomas that arise in the skin.

Census Data. The concept of race, as used by the U.S. Census Bureau, reflects self-identification of people according to the race or races with which they most closely identify. Census 2000 differed from previous censuses in giving respondents the option to identify more than one race category. In 1990 and previous censuses, respondents could identify only one race category. Thus, definitions of race from the 2000 Census are not directly comparable with data from the 1990 and earlier censuses. Unless otherwise noted, data presented in this report that are derived from the 2000 Census show only those responses from persons who identified with only one race category, which is referred to as the "race alone" or "only one race" category.

The U.S. Census recognizes race and Hispanic origin as two separate and distinct concepts. The Hispanic origin population includes persons who indicated they were "Spanish, Hispanic, or Latino." These persons may be of any race. Census data for 2000 and 1990 used the same definition of Hispanic origin.

Abbreviated definitions of selected census definitions used in this report follow. Detailed definitions are available at the U.S. Census Bureau's web site: http://www.census.gov.

Foreign-Born Population. The foreign-born population includes all people who were not U.S. citizens at birth. Foreign-born people are those who indicated they were either a U.S. citizen by naturalization or they were not a citizen of the United States. The foreign-born population includes immigrants (legal permanent residents); temporary migrants (e.g., students); humanitarian migrants (e.g., refugees); and unauthorized migrants (people illegally residing in the United States).

Household. A household includes all of the people who occupy a housing unit as their usual place of residence. *Householder.* The person, or one of the people, in whose name the home is owned, being bought, or rented. *Family.* A family includes a householder and one or more other people living in the same household who are related to the householder by birth, marriage, or adoption. *Female householder, no husband present.* This category includes a family with a female maintaining a household with no husband of the householder present. *Male householder, no wife present*. This category includes a family with a male maintaining a household with no wife of the householder present. *Married-couple family.* This category includes a family in which the householder and his or her spouse are enumerated as members of the same household.

Income. *Household Income***.** This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not. Because many households consist of only one person, average household income is usually less than average family income. *Median income.* The median income divides the income distribution into two equal

groups, one having incomes above the median, and other having incomes below the median.

Labor Force. All people 16 years and older classified in the civilian labor force (i.e., "employed" and "unemployed" people), plus members of the U.S. Armed Forces (people on active duty with the United States Army, Air Force, Navy, Marine Corps, or Coast Guard). *Civilian labor force, employed***.** All civilians 16 years old and over who were either (1) "at work"—those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were "with a job but not at work." *Civilian labor force, unemployed.* All civilians 16 years old and over were classified as unemployed if they were neither "at work" nor "with a job but not at work" during the reference week, were looking for work during the last 4 weeks, and were available to start a job. *Not in labor force.* All people 16 years old and over who are not classified as members of the labor force. This category consists mainly of students, individuals taking care of home or family, retired workers, seasonal workers enumerated in an off-season who were not looking for work, institutionalized people (all institutionalized people are placed in this category regardless of any work activities they may have done in the reference week), and people doing only incidental unpaid family work (fewer than 15 hours during the reference week).

Poverty Measures. The poverty rates in this report are based on a set of *poverty thresholds* that consist of income dollar amounts that vary by family size and composition. The official poverty definition counts money income before taxes and does not include capital gains and noncash benefits (such as public housing, Medicaid, and food stamps). Income in 1999 provides the basis for determining poverty status in the 2000 Census. For example, the average poverty threshold for a family of four was about $17,000 in 1999. Poverty thresholds are updated annually by the census from results of the Current Population Survey.

Residential Segregation (Dissimilarity Index). The Dissimilarity Index is one of five measures of residential segregation developed by Douglas Massey and Nancy Denton. Dissimilarity indicates the percentage of a group's population that would have to change residence for each neighborhood to have the same percentage of that group as the metropolitan area overall. The index ranges from 0.0 (complete integration) to 1.0 (complete segregation). The dissimilarity index corresponds to a dissimilarity value (D) of 0 to 100. An index value of 60 or more indicates very high levels of segregation. In other words, 60% or more of the members of one group would need to move to a different census tract in order for the two groups to be equally distributed. Values of 40 or 50 are usually considered a moderate level of segregation, and values of 30 or below are considered to be fairly low.

Telephone Service. Households with telephone service have a telephone in working order and are able to make and receive calls. Households whose service has been discontinued for nonpayment or other reasons are not counted as having telephone service available. The denominator for the percent calculation for a particular racial/ethnic category is the total number of occupied housing units where the householder who belongs to that racial/ethnic category.

Vehicle Availability. These data show the number of passenger cars, vans, and pickup or panel trucks of 1-ton capacity or less kept at home and available for the use of household members. Vehicles rented or leased for 1 month or more, company vehicles, and police and government vehicles are included if kept at home and used

for nonbusiness purposes. Dismantled or immobile vehicles are excluded. Vehicles kept at home but used only for business purposes also are excluded. The denominator for the percent calculation for a particular racial/ethnic category is the total number of occupied housing units where the householder belongs to that racial/ethnic category.

Communicable Disease Data

Adult Immunization. The Wisconsin Behavioral Risk Factor Surveillance System is the source for adult immunization data.

Childhood Immunization. The Centers for Disease Control and Prevention National Immunization Survey is the source for childhood vaccination coverage data.

Hepatitis B. The Wisconsin Department of Health and Family Services Hepatitis B Program carries out surveillance under the authority of Chapter 252, Wis. Stats. Wisconsin Administrative Code HFS 145.04 (3) requires that hepatitis B infection be reported to the local health officer within 72 hours of identifying a case or suspect case.

Hepatitis C. The Wisconsin Department of Health and Family Services Hepatitis C Program carries out surveillance under the authority of Chapter 252, Wis. Stats. Wisconsin Administrative Code HFS 145.04 (3) requires that hepatitis C infection be reported to the local health officer within 72 hours of identifying a case or suspect case.

HIV/AIDS. HIV infection and AIDS cases are reported to the Wisconsin Department of Health and Family Services AIDS/HIV Program. Completeness of case reporting may vary by race/ethnicity. Annual data are reported for calendar years with year-end data finalized on April 1 of the following year. HIV/AIDS data are summarized quarterly in the Wisconsin AIDS/HIV Update.

Sexually Transmitted Infections. Gonorrhea, chlamydia, and syphilis are reported to the Wisconsin Department of Health and Family Services STD Program. Annual data are reported for calendar years with year-end data finalized on May 4 of the following year. The national source for STD data is the CDC STD Surveillance Report, 2000.

Tuberculosis. Data on tuberculosis disease are reported to the Wisconsin Department of Health and Family Services Tuberculosis Program. Annual data are reported for calendar years with year-end data finalized on March 31 of the following year.

Death Data. Wisconsin mortality data are based on resident death certificates filed with the State Registrar, Wisconsin Department of Health and Family Services Vital Records Section, as mandated by Chapter 29 of the Wisconsin Statutes. Most resident deaths occurred in Wisconsin, although the death file includes certificates for Wisconsin residents who died in other states and countries as well.

Racial categories used in this report and derived from Wisconsin death files exclude persons of Hispanic origin. The category "Asian" includes all Asian race and national origin groups, as well as Pacific Islander. The American Indian category includes Alaska Natives. The "Hispanic" category is constructed regardless of race.

Cause of death. The International Classification of Diseases (ICD), the system used to code cause of death in the death files, was revised in 1999 (from ICD-9 to ICD-10). In this report, death/mortality data that were coded according to ICD-9 (i.e., for the years 1996–1998) have been grouped according to corresponding ICD-10 codes based on recommendations by the National Center for Health Statistics (NCHS).[2] For selected causes of death,[3,4] the correspondence between ICD-9 and ICD-10 is not exact. The causes of death referenced in this report with inexact correspondence between ICD-9

and ICD-10 are pneumonia/influenza, nephritis, and Alzheimer's disease.

NCHS has developed a set of comparability ratios that make adjustments for the coding differences; these should be applied when making comparisons that cross the years of the ICD revisions. In this report, the years 1996–2000 are pooled rather than compared for change so the NCHS comparability ratios were not applied. The comparability issue related to change in ICD coding does not apply to the hospital or cancer incidence data presented in this report. The hospitalization data are coded according to ICD-9 for 1996–2000, and the cancer incidence codes are based on ICD-02 (international classification of diseases for oncology, second edition) for 1996–2000.

Family Health Survey. The Wisconsin Family Health Survey (FHS) is a statewide telephone survey using a stratified random sample of households in Wisconsin. Data collected during 5 years of interviewing (1996, 1997, 1998, 1999, and 2000) were combined and weighted to represent Wisconsin's average household population (including the nonrespondents) and to correct for disproportionate sample sizes. One adult household member, who answers the questions about all persons living in the household, reports all survey responses. Data from the FHS are not shown if the size of the population in the denominator of a proportion contains fewer than 100 cases.

Hospitalization Data. Hospitalization data are from the Wisconsin Inpatient Discharge Data, Wisconsin Department of Health and Family Services, Bureau of Health Information. This database contains information from all Wisconsin hospital discharges based on data extracted from each patient's Uniform Billing Record (UB-92) at the time of discharge. The conditions listed are defined by ICD-9-CM codes.

Data are based on the principal diagnosis only, which is the condition established, after study, to be chiefly responsible for occasioning the admission of the patient to the hospital for care. The data include Wisconsin residents and nonresidents hospitalized in Wisconsin, but do not include Wisconsin residents hospitalized in another state.

Hospitalization data in this report are derived from the primary ICD-9 discharge diagnoses of inpatient hospital admissions in Wisconsin. Hospitalization data are based on frequency of inpatient hospital admissions, not individuals. Therefore, the number of hospital admissions includes multiple admissions by a single person. The frequency of hospital admissions for select causes may give some indication of the burden of diseases in populations. However, the actual incidence and prevalence of diseases in select populations cannot be determined by looking at inpatient hospital data.

Oral Health Surveys

Head Start Survey. The *Healthy Smiles for a Head Start Survey* was a statewide survey of children in Head Start administered by the Wisconsin Department of Health and Family Services, Division of Public Health, in 2003. The survey followed the methods outlined in the Association of State and Territorial Dental Directors' 1999 publication, *Basic Screening Surveys: An Approach to Monitoring Community Oral Health*. A random sample of Head Start grantees within each of the five DHFS geographic regions was generated, and children in these grantee sites for whom a positive consent form was returned were selected to participate in the survey. A total of 456 children participated in the survey. The screenings were completed by one dental hygienist that participated in both a training and calibration session. The number of children screened in each region was proportional to the number of children in that region enrolled in the Head Start program. While the results of this assessment are representative of the oral health of Head Start children, they are not representative of all preschool children in Wisconsin.

Make Your Smile Count Survey. The Make Your Smile Count Survey administered by the Wisconsin Department of Health and Family Services, Division of Public Health, is a survey of third-grade students attending public schools during the 2001–2002 academic year. A self-weighting, stratified sample of elementary schools was obtained for each of the five DHFS geographic regions in the state. Within each region, elementary schools were sorted by percent minority enrollment. A stratified random sample of elementary schools was then selected for each region. Ninety elementary schools participated in the survey.

State Treatment Needs Assessment Program (STNAP) Survey. The 1997 Wisconsin household survey on alcohol and other drug use was administered over the telephone to 8,460 adults and 1,074 adolescents with their parents' approval. While the adult sample was considered representative enough to estimate rates of alcohol and other drug abuse among cultural groups, the adolescent sample was not.

Youth Tobacco Survey. The Wisconsin Youth Tobacco Survey (WYTS), administered by the Wisconsin Department of Health and Family Services, Division of Public Health, tracks tobacco use, attitudes, and related behaviors among public school students enrolled in middle and high school (grades 6 to 12). Data in this report combine information from surveys administered to students from a random sample of middle schools in 2000, 2001, 2002, and 2003. Survey results are weighted to account for nonresponse and to reflect the overall Wisconsin public middle-school population.

Statistical Methods and Definitions

Age-Adjusted Rates. An age-adjusted rate provides a single summary measure that allows one to examine the comparative likelihood of experiencing a condition in two populations despite differences in age structures. An age-adjusted rate has meaning only as a point of comparison to other rates that have been adjusted in the same way. The direct method for calculation of age-adjusted rates is by weighting the actual, age-specific rates in a population of interest by the proportionate age distribution of a standard population. The weighted age-specific rates are then summed across the age categories to provide the age-adjusted rate.

In this report, age-adjustment is based on the direct method, which indicates what the overall rate for a population of interest would be if, given current age-specific rates, the population of interest had the same age distribution as a standard population. Throughout this report, the U.S. year 2000 standard population is used for the standard. (See "U.S. year 2000 standard population.")

Age-adjusted rates take into account the fact that racial/ethnic populations generally have proportionately more younger and fewer older persons than the white or total population. Without adjusting for differences in age distribution, a population with proportionately fewer older people may appear to have lower rates of death or disease, for example, than a population with proportionately more older people, where adverse health outcomes tend to be concentrated. However, as a summary measure, age-adjusted rates can mask important group differences in age-specific rates. Thus, when significant interactions exist between age and racial/ethnic group membership, age-adjusted rates may be misleading.

Age-Specific Rates. Age-specific rates are the actual rates experienced in a relatively narrow age group (for example, 25 to 44 years), so that differences in the age structures of the populations to be compared do not affect the rates. Any age-specific rate can be directly compared to any other rate for the same age group.

Age-Specific Fertility Rate. The age-specific fertility rate is the number of live births to women in an age category per 1,000 women of that age.

General Fertility Rate. The general fertility rate is the number of live births per 1,000 women of childbearing age (15 to 44 years).

Total Fertility Rate. The total fertility rate is the sum of age-specific birth rates divided by the population of women of childbearing age. When the total fertility rate is expressed per woman, it may be interpreted as the average total number of children a woman would have by the end of her childbearing years if she were to experience current age-specific birth rates.

Infant Mortality Rate. Number of deaths of infants less than one year of age per 1,000 live infant births.

Confidence Intervals. Confidence intervals provide an estimated range of values with a specified probability of containing the parameter (in this report, rates or proportions) being estimated. The width of the confidence interval gives some indication of certainty about the unknown population parameter. This report provides confidence intervals for the rate comparison tables (disparity ratios) of mortality and hospitalizations to indicate whether significant differences exist in rates between two groups being compared. Confidence intervals are also provided for estimates based on survey data; the 95% confidence interval indicates that 95 out of 100 random surveys would yield an estimate within the stated confidence interval.

Disparity Ratios. This report uses rate ratios as a way to compare disparities in mortality and hospitalizations by race and ethnicity. A rate ratio is obtained by dividing the rate (of death or hospitalization) in a population of interest by the rate (of death or hospitalization) in the white population. When rates for the population of interest and the referent (white) population are the same, the rate ratio equals 1. When a rate (of death or hospitalization) in the population of interest is higher than the rate in the referent (white) population, the rate ratio will be greater than 1. When a rate (of death or hospitalization) in the population of interest is less than the rate in the referent (white) population, the rate ratio will be between 0 and 1. Tests to determine if the rate ratios are statistically significant were done for all disparity ratios shown in this report; differences that were not significant are noted in all tables.

The following example illustrates calculation of the disparity ratio. The mortality rate of black infants during 1996–2000 was 16.3; during this same period, the mortality rate of white infants was 5.7. To calculate the disparity ratio for black infant mortality, divide the black infant death rate (16.3) by the white infant death rate (5.7): $16.3 \div 5.7 = 2.85$. In this example, the rate ratio of 2.85 indicates that the black infant mortality rate was 2.9 times higher than the white infant mortality rate. A test for statistical significance indicates that a rate ratio of 2.9 is significant. Thus, the disparity ratio reflects a significant disparity in African American infant mortality.

In this report, the white population constitutes the referent population for calculation of the disparity ratios. This choice was based on the following reasons: (a) the white population is the largest single racial group in Wisconsin and thus provides a statistically stable reference group; and (b) using the total Wisconsin population as a referent can deceptively minimize disparities when minority populations have significantly higher mortality or morbidity rates compared to rates in the overall population. The major limitation to this approach is that rates for the white population do not necessarily represent the "best" health status that can be achieved in terms of the rates presented. Thus, disparity ratios represent differences between the population of interest and the white population, but not how close the populations are to achieving optimum health.

Appendices

Populations Used to Compute Rates. Most population-based rates presented in this report are based on 5 years of data, aggregated for the years 1996–2000, and divided by 5 to indicate an annual average for the period. The denominators for these rates are comprised of population estimates for 1996–2000, summed and divided by 5. The Wisconsin Department of Health and Family Services Bureau of Health Information (BHI) prepared these estimates.

Population estimates rather than census data were used for the year 2000 when determining denominators to calculate rates. Population estimates produced by BHI for 2000 were derived from the "bridged" population estimates, created by the National Center for Health Statistics in order to create race categories for 2000 that are comparable to the race categories available from birth and death data. This is because the race categories available from most data sources (including birth and death records) through the year 2000 did not include an option to report multiple races; thus race categories from 2000 vital records are not directly comparable with the race categories from the 2000 Census.

Random Variation and Small Numbers. Data derived from sample surveys are appropriately generalized to the larger population only when populations are adequately represented in the sample. In this report, estimates from the Family Health Survey, the Behavioral Risk Factor Surveillance System, and the Youth Risk Behavior Surveillance System are provided only when the group on which a rate or proportion is based includes at least 100 cases. Confidence intervals, which indicate the range within which an estimate is likely to occur at least 95% of the time, are included for all estimates based on these sample data.

Mortality, birth, hospitalization, and cancer incidence data are based on all Wisconsin resident cases. While they are not subject to sampling error, when the number of events is small and the probability of the event is small, rates can significantly vary from year to year with small increases or decreases of events even if nothing else changes in the actual health status of a population. Thus, caution is needed in interpreting the data based on small numbers. Most of the tables in this report pool 5 years of data, which provides greater stability of numbers than a single year of data. Disparity ratios include confidence intervals that take into account the probability of random variation due to small numbers in the population group and the event of interest.

U.S. Year 2000 Standard Population. The U.S. year 2000 standard population consists of an age-specific population distribution, which was projected for the U.S. in the year 2000. Beginning with data published in 1999, the Centers for Disease Control and Prevention have recommended that the U.S. year 2000 standard population be used in calculation of all age-adjusted rates based on the direct method. Details are provided at http://www.cdc.gov/nchs/data/nvsr47_3.pdf.

Prior to 1999, the U.S. 1940 population was the recommended standard for age adjustment based on the direct method. An age-adjusted death rate based on the year 2000 standard is larger than the rate based on the 1940 standard because the year 2000 standard, which has an older age structure, gives more weight than the 1940 standard to death rates at the older ages where mortality is higher. Because the year 2000 standard gives greater weight to the older population, where race differences in mortality are generally smaller, the disparity between race groups' death rates will appear to narrow when the year 2000 standard is used as compared to the previously reported rates that were based on the 1940 standard. This is an artifact of this change, and does not itself signify a trend.

Years of Potential Life Lost. Years of potential life lost (YPLL) is a measure of premature mortality. The number of deaths for each age group before age 75 is multiplied by years of life lost, calculated as the difference between age 75 and the midpoint of the age group.

Notes

1. US Department of Health and Human Services. Revisions to the standards for the classification of federal data on race and ethnicity. *Fed Regist*. October 30, 1997;62:58782–90.
2. Hoyert DL, Arias E, Smith BL, Murphy SL, Lochanek KD. Deaths: final data for 1999. *National Vital Statistics Reports;* 2001;49.
3. Anderson RN, Minino A, Hoyert D, Rosenberg H. Comparability of cause of death between ICD-9 and ICD-10: preliminary estimates. *National Vital Statistics Reports;* 2001;49.
4. For further information about ICD-9/ICD-10 comparability, see the BHI/DHFS publication *Wisconsin Deaths, 1999*, technical notes, http://dhfs.wisconsin.gov/deaths/pdf/ICD10-9comparetable.pdf.